

### REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-8 remain active in the application subsequent to entry of this Amendment.

Attached is an Information Disclosure Statement again submitting for consideration the three Japanese-language patent documents and this time providing a concise explanation of the relevance of each document in English as provided by MPEP §609A(3). The appropriate fee has been paid to obtain full consideration of these documents in light of the concise explanation now furnished.

The claims have been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention. The electrode substrate in claims 1 and 3 is defined as a sintered electrode substrate filled with a cadmium active substance on a surface of which nickel powder is coated. See the description given in item [0017] of the specification as well as elsewhere in the description. Method claims 3-6 have been revised to define the method as a series of active steps and to improve syntax; a minor adjustment for purposes of syntax has been made in claim 2.

The Official Action (items 2-6) contains three separate rejections of the claims all over upon Yasuda JP 56-56365 which is based upon a partial translation of the underlying document prepared by the Japanese Patent Office. Unfortunately, the English translation contains a fundamental and significant error.

In the translation under the heading CONSTITUTION, Yasuda's Abstract shows that a paste containing cadmium oxide or cadmium hydroxide powder mixed with polyethylene glycol to make a paste. This paste is filled in a porous drilled steel-plate to provide negative electrode.

However, Yasuda does not describe the inclusion of polyethylene glycol – the example describes use of ethylene glycol as a solvent for polyvinyl alcohol. Accordingly, "*polyethylene glycol*" described in the Yasuda Abstract is a mistranslation

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of "ethylene glycol". This is apparent from the following description extracted and translated from the Yasuda reference.

"In the following description, specific examples and effects thereof according to the invention will be stated in detail. At first, for clarifying the effects of the invention, concerning polytetrafluoroethylene powder as polyethylene powder, polystyrene powder or fluororesin powder, the relation between the respective addition amounts and using ratios of the active materials will be stated. The negative electrode was produced as follows. 60 wt parts of CdO powder, 20 wt parts of Cd(OH)<sub>2</sub> powder, 10 wt parts of Cd powder, and 10 wt parts of nickel powder are mixed to produce the active material. Further this active material is added with the above mentioned synthetic resin having changed the addition amount, and mixed. To 100 g of the mixed powders, 30 ml of ethylene glycol dissolved with 1 wt% of polyvinyl alcohol is added to be a paste. Subsequently, the paste is coated on a nickel-plated and pored steel sheet, then dried at 180°C for five minutes, and adjusted in thickness by roller-pressing treatment to be a negative sheet of 0.9 mm thickness." (emphasis added)

Ethylene glycol is not a polymer (it is not polymerized), and being liquid at room temperature, it does not form a film. On the other hand, *polyethylene glycol* is a solid substance at room temperature at which ethylene glycol is chemically polymerized, and it forms a film at room temperature. This fact, as mentioned in line 20 of page 20 to line 7 of page 21 of applicants' specification, is apparent from the fact that if a polymerization degree of polyethylene glycol is too low, viscosity becomes lower so that the effect of the instant application is not obtained. Ethylene glycol and polyethylene glycol are two chemically different substances and in the context of the present invention cannot be interchanged.

Also, as mentioned in line 8 of page 6 to line 3 of page 7 of the specification of this application, in a cadmium negative electrode for an alkaline battery where cadmium active material is filled in a sintered type electrode substrate coated with nickel powder on a surface of conductive core, the present invention aims at solving a problem that the entrance of fine pores present at the surface of cadmium negative electrode is closed

thereby reducing discharge capacity, or deteriorating charge and discharge cyclic characteristics.

Applicants are concerned with a well-recognized problem in this art, namely avoiding the growth of platy crystals of beta-cadmium hydroxide, and have discovered that the use of a coating of polyethylene glycol (PEG) formed on the surface of a cadmium negative electrode or on the surface of a cadmium active substance inhibits the growth of these platy crystals and the openings of the fine pores in the cadmium negative electrode tend to become less clogged and this, in turn, serves to prevent a fall off in discharge capacity and suppresses degradation of the charge-discharge characteristics of the storage battery in which such PEG coatings are incorporated.

In contrast to the present invention, Yasuda is concerned with a paste type cadmium negative electrode where the paste of CdO powder or Cd(OH)<sub>2</sub> powder is coated on the porous steel sheet. On the surface of the paste type negative electrode, only the active material exists, and no entrance of a narrow hole of the electrode substrate is present. Accordingly, the problem this application is intended to solve, that discharge capacity is reduced, or charge and discharge cyclic characteristic are deteriorated by closing the entrance of narrow hole at the surface of cadmium negative electrode, does not arise.

From the above information it will be apparent, Yasuda is totally different from the present invention in both of structure and working properties, since Yasuda does not use polyethylene glycol, a film is not formed on the surface of the cadmium negative electrode, and further, since Yasuda does not use a sintered type electrode substrate coated with nickel powder on a surface of conductive core, closing does not occur in the entrance of the narrow holes at the surface of cadmium negative electrode.

For the above reasons the Yasuda et al disclosure, when properly understood, does not anticipate the subject matter of claims 1, 3 and 5, either as originally filed or as above amended.

The same primary reference is applied against claims 2, 4 and 6 in combination with Treger et al US 6,514,637 in item 5 of the Official Action while claims 7 and 8 are rejected as allegedly being obvious over the same primary reference in view of the Linden Handbook. Neither of these separate rejections have merit, they are fundamentally flawed because the primary reference itself is fundamentally flawed, as explained above. Further, neither of the secondary references, considered by themselves or in combination, is suggestive of the subject matter defined by applicants' claims. Moreover, there is no reason established in this record why one of skill in the art would combine the teachings of these documents.

The U.S. Court of Appeals for the Federal Circuit has stated that "[t]he mere fact that the prior art may be modified in the manner suggested by the examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) (citing *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)). Although this statement is couched in terms of modifying the prior art, in May of this year the Board of Appeals and Interferences, in a non-precedential decision (67 USPQ2d 1633 at 1635) held that the mere fact that teachings found in the prior art could be combined as proposed by an examiner does not make the combination obvious "absent some teaching, suggestion or incentive supporting the combination." *Carella*, 804 F.2d at 140, 231 USPQ at 647 (citing *ACS Hosp. Syss., Inc.*, 732 F.2d at 1577, 221 USPQ at 933).

Accordingly, the rejections stated in items 4-6 of the Official Action are defective in that this record does not establish any teaching, suggestion or incentive to combine the applied documents.

Considering the two supplementary references individually, Treger, as acknowledged and discussed in applicants' specification on line 61 of column 2 to line 2 of column 3, is concerned with an alkaline primary battery having zinc-manganese

dioxide, and does not mention the use of cadmium as the active material as the application.

Suffering the same defects as Yasuda, Treger does not mention the use of the sintered type electrode substrate coated with nickel powder on a surface of conductive core as applicants disclose and now claim.

As explained above, in Treger, when preparing a cadmium negative electrode by using a sintered type electrode substrate coated with nickel powder on a surface of conductive core, one is unlikely to encounter the problem that the entrances of narrow holes on the surface of negative electrode is closed, nor to determine that polyethylene glycol is effective for solving this problem.

Thus, there is no suggestion of using polyethylene glycol shown in Treger to the Yasuda disclosure.

Linden, also of limited value, is only concerned with a nickel-cadmium battery and is totally silent as to a possible use of a sintered type electrode substrate coated with nickel powder on a surface of conductive core nor the use of polyethylene glycol. So, when considered in combination with Yasuda, the combined disclosures still do not result in an alkaline battery having solved the problem that the entrances of narrow holes on the surface of negative electrode is closed.

For the above reasons it is respectfully submitted that the claims of this application define inventive subject matter. Reconsideration and favorable action are requested.

The examiner is requested to consider and make of record the Information Disclosure Statement submitted with this Amendment and for which the relevant fee has been paid.


Having fully responded to all of the pending objections and rejections contained in the Official Action, applicants submit that the claims are in condition for allowance and earnestly solicit an early Notice to that effect. The examiner is invited to contact the undersigned if any further information is required.

TOMIHARA et al  
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Respectfully submitted,

**NIXON & VANDERHYE P.C.**

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